

國立臺灣大學九十三年學年度轉學生入學考試試題

題號 :52

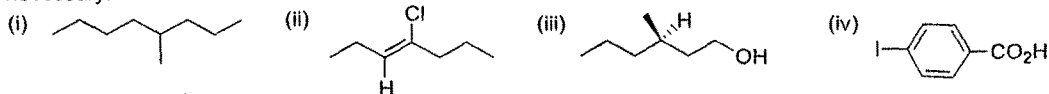
共 2 頁之第 1 頁

科目：有機化學

※ 請在答案卷上標明題號依序作答

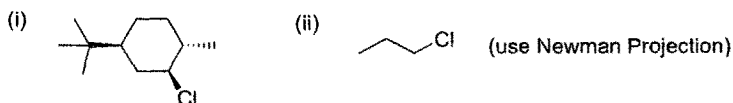
**Problem 1 (8 pts)**

Name the following compounds according to the IUPAC rules. Specify the (R)-, (S)-, (E)-, or (Z)- notations if necessary.



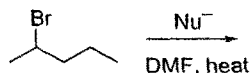
**Problem 2 (8 pts)**

Draw the most stable conformer for the following compounds



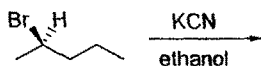
**Problem 3 (8 pts)**

(i) Which nucleophile will produce the greatest amount of elimination versus substitution in the following reaction?



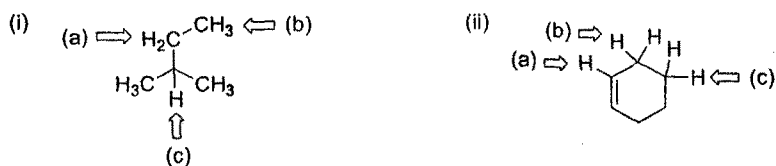
$\text{Nu}^-$  : (a)  $\text{CH}_3\text{CH}_2\text{O}^-$ ; (b)  $(\text{CH}_3)_3\text{CO}^-$ ; (c)  $\text{CH}_3\text{CO}_2^-$

(ii) What is the product of the following reaction. Specific the stereochemistry



**Problem 4 (8 pts)**

State which of the three indicated hydrogen atoms would be abstracted at the most rapid rate by  $\text{Br}_2$  in the presence of light.



**Problem 5 (8 pts)**

Which of the following substituents are activating group in electrophilic aromatic substitution?

$\text{NO}_2^-$ ;  $\text{Cl}^-$ ;  $\text{CH}_3\text{O}^-$ ;  $\text{CH}_3^-$ ;  $\text{Br}^-$ ;  $\text{CH}_3\text{CO}^-$ ;  $\text{CH}_3\text{CONH}^-$ ;  $\text{N}\equiv\text{C}^-$

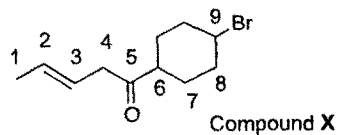
Which of the following substituents are ortho-para directing group in electrophilic aromatic substitution?

$\text{NO}_2^-$ ;  $\text{Cl}^-$ ;  $\text{CH}_3\text{O}^-$ ;  $\text{CH}_3^-$ ;  $\text{Br}^-$ ;  $\text{CH}_3\text{CO}^-$ ;  $\text{CH}_3\text{CONH}^-$ ;  $\text{N}\equiv\text{C}^-$

**Problem 6 (8 pts)**

For compound X shown on the right diagram,

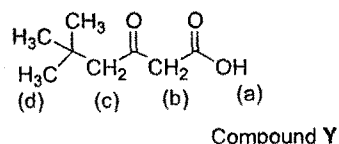
(i) which of the labelled carbons of compound X are nucleophilic,  
(ii) which carbons are electrophilic?



**Problem 7 (8 pts)**

For compound Y shown on the right diagram,

(i) Which protons would have pKa smaller (more acidic) than  $\text{H}_2\text{O}$ ?  
(ii) Which protons would have pKa around 20-23?  
(iii) Which protons would have pKa larger than 30?



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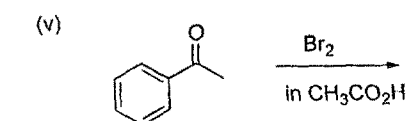
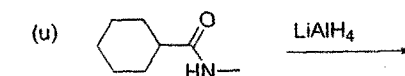
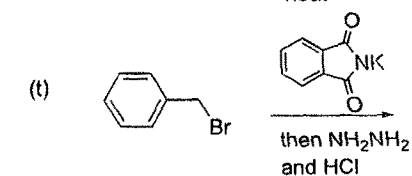
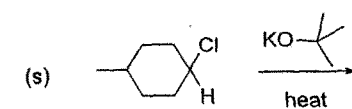
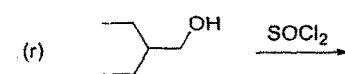
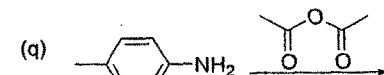
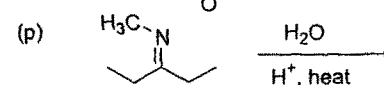
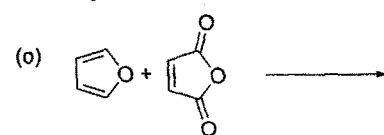
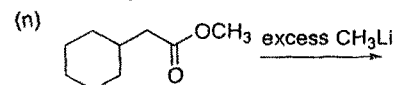
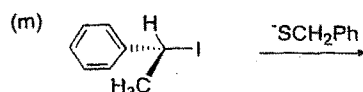
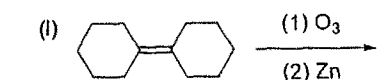
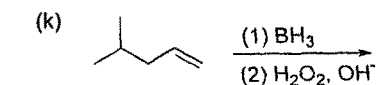
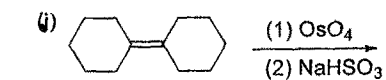
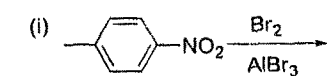
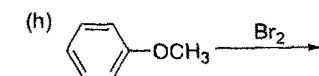
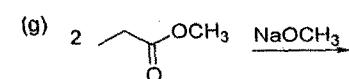
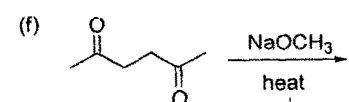
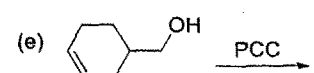
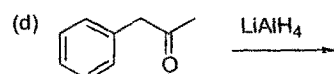
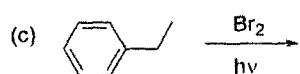
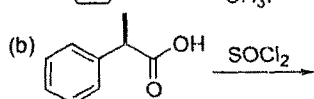
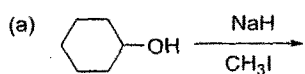
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**Problem 8:** Predict the product of the following reactions. Clearly note the stereochemistry in necessary (44pts)



試題必須隨卷繳回